1. A method for maintaining an accurate frequency for a voltage controlled oscillator in a phase-locked loop, comprising the steps of:

receiving, at a phase detector, a phase input signal and a phase feedback signal from the voltage controlled oscillator;

measuring a pulse width property of an error signal output from the phase detector to obtain a pulse width property measurement;

storing the pulse width property measurement in a memory; and generating a new signal based on the stored pulse width property measurement to maintain the frequency of the voltage controlled oscillator.

- 2. The method of claim 1, wherein the generating step is performed when the phase input signal is lost.
- 3. The method of claim 1, wherein the generating step is performed when the phase input signal becomes unsuitable for proper operation of the phase-locked loop.
- 4. The method of claim 1, wherein the measuring step is performed at periodic intervals.
- 5. The method of claim 1, wherein the measuring step is performed as an initial on-site calibration function.
- 6. The method of claim 1, wherein the phase input signal is derived from a reference clock signal.

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7. The method of claim 1, wherein the pulse width property comprises a pulse width measurement of a high level of the error signal and a pulse width measurement of a low level of the error signal, and the measuring step further comprises the steps of:

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detecting a first rising edge of the error signal;
starting a counter to measure the high level pulse width of the error signal;
detecting a falling edge of the error signal;
stopping the counter to obtain the high level pulse width;
restarting the counter to measure the low level pulse width of the error signal;
detecting a second rising edge of the error signal; and
stopping the counter to obtain the low level pulse width.

8. The method of claim 1, wherein the pulse width property measurement comprises a high pulse width measurement of a high level of the error signal and a pulse width measurement of a low level of the error signal, and the generating step further includes the steps of:

starting a count down counter from a count corresponding to the stored high level pulse width measurement;

generating a high level of the new signal until the counter stops;

restarting the counter to count down from a count corresponding to the stored low level pulse width measurement; and,

generating a low level of the new signal until the counter stops.

9. The method of claim 2, wherein upon a reappearance of the phase input signal, the generating step is terminated.

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10. The method of claim 3, wherein upon acquiring a suitable phase input signal, the generating step is terminated.

## 11. A system comprising:

a phase detector that generates an error signal from a phase input signal and a phase feedback signal from a voltage controlled oscillator;

a measurement circuit operative to measure a pulse width property of the error signal;

a memory module for storing the measured pulse width property; and

a generation circuit operative to retrieve the measured pulse width property from the memory module and to generate a new signal based thereon;

wherein the new signal is used instead of the error signal to control the frequency of the voltage controlled oscillator.

13. A computer-readable medium containing a computer program for maintaining a frequency of a voltage controlled oscillator, said program including instructions for executing the steps of:

receiving, at a phase detector, a phase input signal and a phase feedback signal from the voltage controlled oscillator;

measuring a pulse width property of an error signal output from the phase detector to obtain a pulse width property measurement;

storing the pulse width property measurement in a memory; and generating a new signal based on the stored pulse width property measurement to phase-lock the voltage controlled oscillator.

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14. The computer-readable medium of claim 13, wherein said step of measuring a pulse width property measures a duration of a high signal level and a duration of a low signal level of the error signal, and said step of generating a new signal generates a high signal level for a time duration corresponding to the measured high signal level and generates a low signal level for a time duration corresponding to the measured low signal level.

## 15. A method for calibrating a phase-locked loop, comprising:

receiving an input phase signal and a feedback signal into a phase detector such that the loop is phase-locked;

measuring a pulse width property of an error signal output from the phase detector; storing the measured pulse width property of the error signal;

using the stored pulse width property to generate a calibration reference signal which can be supplied to the phase detector.

16. A method of implementing clock holdover in a phase-locked loop, comprising:

receiving an input phase signal and a feedback signal into a phase detector such that the loop is phase-locked;

periodically measuring a pulse width property of an error signal output from the phase detector;

determining whether the measured pulse width property satisifies a predetermined condition over a predetermined period of time, and storing the measured pulse width property if it satisfies the predetermined condition;

using the stored pulse width property to generate a reference signal to be supplied to the phase detector when the input phase signal is lost or becomes unsuitable for proper operation of the phase-locked loop.

- 17. A method of qualifying a potential clock reference for a phase-locked loop, said phase-locked loop comprising a phase detector having a phase input signal and a phase feedback signal as inputs, a system clock and a VCO, said method comprising:
  - a. determining a relative frequency measurement of the potential clock reference relative to the system clock;
  - measuring a pulse width property of an error signal output from the phase detector;
  - c. determining a frequency output of the VCO from the measured pulse width property; and
  - d. determining whether the potential clock reference would lock the phaselocked loop from the determined relative frequency measurement and the determined VCO frequency output.